

SCHEDULE 20

Handback Requirements

Element Category	Residual Life at Handback (years)	Inspection Requirements	Residual Life Methodology (RLM) Requirement
Road Pavement			
Managed Lanes	10	<p>Pavement inspections shall be by independent testing organizations.</p> <p>Inspections shall provide a continuous or near-continuous record of Residual Life, the number of valid measurements in each Auditable Section shall be sufficient to give a statistically valid result.</p> <p>Inspections shall be repeatable to an agreed level of accuracy and inspection contracts shall include an agreed proportion of inspections to verify accuracy.</p> <p>Inspections shall include ride quality, skid resistance and rutting.</p>	<p>RLM shall be capable of calculation of Residual Life for each Auditable Section.</p> <p>For a nominal 10 year Residual Life at Handback, 85% of Auditable Sections shall have a Residual Life exceeding 10 years, and no Auditable Section shall have a calculated Residual Life of less than 7 years.</p> <p>See Table 1 below for further instructions on RSL calculations</p>

Element Category	Residual Life at Handback (years)	Inspection Requirements	Residual Life Methodology (RLM) Requirement
Structures			
Reinforced concrete	25	<p>Inspections of structures shall be undertaken by independent testing organizations.</p> <p>Inspections shall follow the latest inspection guidelines (as they apply at the relevant date that the testing is undertaken) recognized by CDOT.</p> <p>A close examination shall be made of all parts of each structure.</p> <p>Non-destructive tests shall be undertaken appropriate to the type of structure. These shall include the measurement of structural deflection under calibrated load, the identification and measurement of chloride and carbonation profiles from surface to reinforcement and/or tendon level, and the in-situ strength testing of concrete Element.</p> <p>Testing of steel structures shall include the depth of corrosion and/or the measurement of remaining structural thickness for hidden and exposed parts.</p> <p>All lengths of weld shall be tested for cracking at key areas of structural steelwork.</p>	<p>RLM shall: Draw on historic asset maintenance records, inspection and test histories for each structure.</p> <p>Take account of CDOT and FHWA records of other structures on the network with similar characteristics.</p> <p>Include an assessment of load carrying capacity based on the original structural design calculations, the as built drawings and results of load deflection tests where appropriate.</p> <p>Take account of any trends in asset deterioration to determine the rate of deterioration and to predict the future condition of individual Elements and the entire structure.</p> <p>Additional Bridge Evaluation Requirements: No bridge will be structurally deficient as defined by the NBI, all NBI condition ratings should be 7 or greater, all Points condition states should be 1 or 2, no bridge should be load restricted (as per the bridge weight limit map), no bridge should have a vertical clearance less than 16 (or 16.5) feet, no bridge should be scour critical, and all bridge and guardrail transitions should meet current</p>
Pre-stressed concrete	25		
Structural steelwork	25		
Weathering steel	25		
Corrugated steel	25		
Corrosion protection for structural steelwork	10		
Deck surfacing	10		
High mast lights	10		
Deck joints	10		
Bearings	25		
Railing	25		
Sign/signal gantries (structural Elements)	25		
Retaining walls	25		
Noise Walls	25		
(All structures above exclude the I-25 Bridge Deck Superstructures)			

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			AASHTO and FHWA standards.
I-25 Bridge Deck Superstructure	5	As above.	As above.

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Toll Collection Equipment	10	Inspections shall comply with Good Industry Practice.	RLM shall draw on historical asset maintenance records, inspection and test histories for each piece of equipment
Drainage			
Underground storm sewer	25	Inspections shall comply with Good Industry Practice and as agreed with HPTE.	RLM shall draw on historical asset maintenance records, inspection and test histories for each individual drainage asset.
Culverts	25		
Ditches	**10		
Inlets	**10		
Outfalls	**10		
Media Filter Drains	2		
Ancillary			
Pavement markings	**	Inspections shall comply with Good Industry Practice and as agreed with HPTE.	RLM shall draw on historical asset maintenance records, inspection and test histories for each individual asset. For items designated with “***” the residual life requirement shall be met if Element is being maintained as prescribed by Appendix 6-1 or 6-2 and is in a condition whereby it is able to fulfill its intended purpose. Where a life is also indicated after the “***” it is informational as to expected replacement cycles.
Delineators	**5		
Roadside traffic signs	**5		
Earthwork slopes	**		
Metal beam guard rail	10		
Concrete barrier	**		
Impact attenuators	10		
Lighting columns	10		
Overhead signs	5		
Traffic signal poles	10		
Mid-mast lighting	10		
Manhole covers, gratings, frames, and boxes	**10		
Curbs and gutters	**10		
Lanterns (lamps/luminaries)	**5		
Node Building 2	As originally transferred (1)		
70 th Avenue Sand Dome and Magnesium Chloride	As originally transferred(1)		

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Storage			

(1) As Originally Transferred shall mean that upon the Commencement Date an inspection shall be made of these items and the asset shall be returned in "as equal" or better condition

Table 1	
Pavement Calculations for 10-Year RSL	
Distress Type	Threshold (per tenth mile)
Permanent Deformation	0.50 inches in any wheel path
Longitudinal Cracking	30 feet
Transverse Cracking	5 counts
Load Associated Longitudinal Cracking	50 square feet
Bleeding	50 square feet
Raveling	50 square feet
Roughness, IRI or MRI	150 in/mile